

**CALIFORNIA AIR RESOURCES BOARD
FREQUENTLY ASKED QUESTIONS (FAQ):
LARGE SPARK IGNITION (LSI) ENGINE FLEET REQUIREMENTS**

APPLICABILITY

1. What equipment is covered by the fleet average portion of the Off-Road Large Spark Ignition Engine Regulation (LSI fleet regulation)?

The LSI fleet regulation addresses engines that are fueled by gasoline, CNG, or LPG, rated at 25 horsepower or greater (greater than 19 kilowatts), and used in forklifts and the following non-forklift equipment: industrial tow tractors, airport ground support equipment, and sweeper/scrubbers.

2. How do I know if the LSI fleet regulation applies to me?

You need to determine your fleet size. To do so, you must first determine whether you need to add the equipment in each of your fleets together. If your facilities make their equipment procurement decisions, including budgeting, independent of one another, then their equipment does not have to be added together for the purposes of determining fleet size. However, if procurement decisions and/or budgeting occur at a higher echelon headquarters or corporate level, then all of the equipment at all of the facilities for which the higher echelon level makes procurement decisions must be added or aggregated together to determine fleet size. For example, if you have a main facility where all equipment procurement and budgeting occurs and two satellite facilities and each of the three facilities has three forklifts, then your company has nine forklifts and is considered a medium size fleet.

If you have a total of four or more forklifts or four or more pieces of non-forklift LSI equipment, then the LSI fleet regulation applies to you.

3. What if I don't have four or more forklifts or four or more pieces of non-forklift equipment?

If you have three or fewer forklifts and/or three or fewer pieces of non-forklift LSI equipment, then you are exempt from the provisions of the LSI fleet regulation. This means you may have as many as six pieces of LSI equipment and still be exempt.

4. Do I count electric equipment in my fleet size determination?

Yes, except that operators of Agricultural Crop Preparation Services fleets are not required to include electric forklifts in determining their fleet size because their standards are not based upon a fleet average calculation. Electric equipment purchased before January 1, 2007, including airport Ground Support Equipment, that replaced a diesel vehicle may be included in the fleet average for the In-Use Off-Road

Diesel-Fueled Fleets (title 13, California Code of Regulations, section 2449 and following). These vehicles will not be included in the LSI fleet size determination.

5. Are aerial lifts included in the LSI fleet regulation?

No, only the four categories of equipment addressed in Question 1 are to be addressed by the LSI fleet regulation.

6. Does my diesel equipment have to comply with the LSI fleet regulation?

No, but there are two other regulations for off-road diesel engines that might be applicable. For information regarding those regulations and to determine if they apply to your equipment, please visit the following Air Resources Board (ARB) websites:

<http://www.arb.ca.gov/ports/cargo/cargo.htm>

<http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>

RECORDKEEPING AND REPORTING

7. Do I have to maintain records?

Yes, the LSI fleet regulation requires LSI fleet operators to conduct a baseline inventory of their fleet by November 12, 2007. To accomplish this, fleet operators must record and maintain on file at their facilities, information on the equipment type, make, model, serial number, and emission certification standard or retrofit verification level. Fleet operators also need to maintain on file fuel quality records (for example, a written statement, product delivery ticket, or receipt from the fuel supplier), if obtainable, that demonstrate that the propane fuel they purchased for their fleet meets all applicable state and federal laws for use in their engines. Operators that maintain multiple facilities may aggregate their records at a centralized facility or headquarters.

8. How long do I have to maintain these records?

Fleet operators need to retain information on the baseline inventory and all subsequent inventories showing additions and deletions to the fleet until June 30, 2016. Fleet operators need to maintain fuel quality records during the same period except that individual records need only be retained for a period of three years.

9. Do I have to report information?

No, the LSI fleet regulation does not require reporting. However, ARB compliance staff may request records in advance of a site visit, especially if the data for multiple facilities is aggregated together, and staff wants to view a representative sample.

10. What if my engine label no longer exists?

Each 2001 and newer LSI engine will have an engine label, typically on the valve cover. You will see in the following section that this label is critical to your fleet average calculation. If you are unable to find the label, or if the label has been destroyed, you will need to work with your equipment dealer or the equipment manufacturer to obtain a replacement label. The dealer or manufacturer will need to have the engine family or engine serial number to issue a new label.

11. Do I keep records of my lease and rental equipment?

Yes, your baseline inventory and later inventories will need to include your lease and rental equipment. You will also need to be able to demonstrate the lease or rental period for each piece of lease or rental equipment in your fleet.

FLEET AVERAGE CALCULATION

12. Do I have to do “tailpipe testing?”

No. The LSI fleet regulation states that the fleet average is based either upon the standards to which new engines are certified and retrofitted engines are verified, or the assigned default emission rate for LSI engines without emissions controls (three-way catalyst, oxygen sensor, and electronic fuel-air controller).

13. What specific numbers do I use in calculating my fleet average?

The LSI fleet average calculation does not incorporate equipment hours of use, horsepower, or specific emission factors. Instead, it is based upon new engine certification standards, retrofit verification standards, and a prescribed default emission rate for uncontrolled engines.

2000 and older model year (MY) engines and 2001 through 2003 MY engines without emission controls (as evidenced by a label or placard on the engine that states something to the effect of "this engine is a certified noncompliant engine") are assigned a default hydrocarbon plus oxides of nitrogen (HC+NO_x) emission rate of 12.0 grams per brake horsepower-hour (g/bhp-hr). The ARB and many engine manufacturers are now expressing emissions in grams per kilowatt-hour (g/kW-hr). The uncontrolled default HC+NO_x emission rate expressed in kilowatt-hour units is 16.0 g/kW-hr.

2001 through 2003 MY engines with emissions controls (as evidenced by a label or placard on the engine that states something to the effect of "this engine complies with California emission standards") have an HC+NO_x emission standard of 3.0 g/bhp-hr (4.0 g/kW-hr).

2004 through 2006 MY engines have an HC+NO_x emission standard of 3.0 g/bhp-hr (4.0 g/kW-hr).

2007 and later MY engines have an HC+NOx emission standard of 2.0 g/bhp-hr (2.7 g/kW-hr), and 2010 and later MY engines have an HC+NOx emission standard of 0.6 g/bhp-hr (0.8 g/kW-hr). These engines will actually have the emission standard listed on the label.

Many manufacturers are optionally certifying engines below the 2007 standard, and some have already certified to the 2010 standard. These optional lower emission standard engines will also have the emission standard listed on the label. Be sure to view the engine labels of your new equipment before performing your fleet average calculation.

All Class 1 and 2 forklifts may be included in the fleet average calculation and will be considered to have an HC+NOx emission level of zero. Electric equipment may also be included in the non-forklift fleet average calculations. Electric equipment with a power rating of less than 19 kilowatts may be included in the fleet average calculation provided that the operator can demonstrate that the equipment performs the work equivalent of an LSI engine-powered piece of equipment.

14. I have performed my fleet average calculation. Do I round my result to see if I am in compliance with the LSI fleet regulation? For example, does a fleet average of 2.64 comply with a requirement of 2.6?

The ARB has accepted a common convention for the LSI fleet regulation. That convention specifies that you round up if the last digit is five or more and you round down if the last digit is less than five. Under this rounding convention, a calculated fleet average value of 2.64 would meet a 2.6 standard, but 2.65 would not, as it would be rounded to 2.7.

15. Can I include equipment on order in my fleet average calculation?

Yes, fleet average calculations may include equipment for which purchase orders have been completed but receipt hasn't occurred.

16. Do I have to include equipment in the fleet average calculation if it is used infrequently?

No, the LSI fleet regulation allows equipment to be excluded from the fleet average calculations until January 1, 2011, if it is used 250 hours per year or less. However, at that time, the exempted pieces of equipment must be retrofitted or repowered. Alternatively, they may be retired.

- 17. Can I exclude from my fleet average calculation uncontrolled equipment leased or rented for a period of less than one year if it were leased or rented on or before the emission standards for leased or rental equipment becomes effective on January 1, 2009?**

Yes, provided that the rental or lease component comprises no more than 20 percent of the operator's equipment at any time. If your rental or lease component exceeds 20 percent, all equipment in excess of 20 percent must be included in the fleet average calculation.

- 18. How does the less than 30 days exemption differ from the less than one year exemption discussed in Question 17?**

The less than 30 day exemption is for equipment rented from out of state for a period of 30 days or less. For example, if an operator in Truckee needs to rent a forklift and the only one available is an uncontrolled forklift out of Reno, the operator may exclude that forklift from his or her fleet average calculation as long as it does not spend more than 30 aggregated days in one year in the operator's fleet.

LIMITED HOURS OF USE (LHU) EQUIPMENT

- 19. How do you first designate a piece of equipment as LHU? Do you need to have three years of usage information (an average of 250 hours per year) first?**

The intent (and the assumption) of the regulation is that the equipment is to have been LHU at the time the regulations went into effect in May 2007. Equipment used full time after May 2007 is unlikely to meet the three year LHU average. Since operators could not reasonably foresee the requirement to have usage information in advance of the regulation, ARB will allow operators to average as much data as they have for a three-year period. If they don't have three years to average, then they may average whatever period they have beginning with the May 12, 2007 operative date of the LSI fleet regulation. Any records they have to support average use of less than 251 hours per year will support the exemption.

- 20. How can I get three years of LHU recordkeeping beginning May 12, 2007 when the baseline inventory wasn't required until November 12, 2007?**

The ARB will be flexible with the three-year period for LHU equipment since the LHU provision is only applicable until January 1, 2011.

- 21. How often should I record my LHU hours?**

You should record hours of use annually at a minimum, although quarterly or more often is preferable.

- 22. Can I, after exempting my uncontrolled LHU equipment from my fleet average calculation for two years, choose to forego retrofit or retirement, and instead include it as uncontrolled equipment in my fleet average calculation?**

No. Once an operator elects to exempt a piece of equipment using the LHU provision, that carries forward except LHU equipment controlled to a 3.0 g/bhp-hr (4.0 g/KW-hr) or better standard may be allowed back into the fleet average calculation at any time.

LABELING AND THE CERTIFICATION DATABASE

- 23. Can I calculate my fleet average using the ARB certification database or the executive order listed for a particular engine family instead of the engine labels?**

Yes, BUT USE CAUTION. The LSI fleet regulation says the fleet average calculation should be based upon the labels affixed to certified new engines or verified retrofit emission control systems. However, you may use an engine's executive order or the LSI certification database (<http://www.arb.ca.gov/msprog/offroad/cert/cert.php>) provided that you use the emission **standard** and not the emission **certification level**. The latter is the emission level achieved during certification testing, while the former is the standard to which the manufacturer actually certified. The manufacturer only warrants emissions performance to the standard, and not the level achieved during testing. If the LSI certification database has triple dashes (---) in the certification level or standard columns for a given engine, then that engine is uncontrolled and must use the default emission rate described in response to Question 13.

- 24. What if my engine doesn't have a label?**

Please see the response to Question 10.

FUEL QUESTIONS

- 25. Is CNG-fueled equipment included in the fleet average?**

Yes, title 13 CCR section 2775 applies to operators of off-road LSI engine forklifts, sweepers/scrubbers, industrial tow tractors and airport GSE regardless of fuel type.

- 26. Are there verified retrofit kits for gasoline forklifts? If not, will they be exempted?**

At this time, there are no verified retrofit kits for gasoline-fueled LSI engines, but there are kits for engines converted from gasoline fuel to LPG. Thus, the ARB does not plan to exempt gasoline-fueled engines from the requirements of the LSI Fleet Regulation. However, the Executive Officer of the ARB has the authority to grant a one-year extension to equipment operators that find themselves unable to meet the fleet average

emission level requirements as a result of their gasoline-fueled LSI equipment. Please refer to title 13, CCR, section 2775.2 for details on requesting an extension.

27. What number is used in fleet average calculations for CNG equipment?

Just as with new propane-fueled engines, CNG fueled engines will have a label that specifies the emission standard. Verified retrofit emission control system labels will also specify the emission standard to which the system was verified.

28. Does the default emission rate of 12.0 g/bhp-hr apply to both gasoline and CNG LSI equipment?

Yes, the assigned default emission rate of 12.0 g/bhp-hr HC+NO_x represents uncontrolled LSI equipment operating on gasoline, propane, or CNG.

29. How do I convert from g/bhp-hr to g/kW-hr? And back?

To convert from g/bhp-hr to g/kW-hr, you divide by 0.746. For example, 3.0 g/bhp-hr is approximately 4.0 g/kW-hr. And to convert from g/kW-hr to g/bhp-hr, you multiply by 0.746. For example, 2.7 g/kW-hr is approximately 2.0 g/bhp-hr.

RETROFITS

30. What are retrofits?

The term “retrofit” refers to an emission control device. Retrofit devices for LSI engines are verified using the ARB LSI Verification Procedure regulation and are designed primarily to reduce HC+NO_x and carbon monoxide (CO) emissions. The Verification Procedure provides a way to thoroughly evaluate the emission reduction capabilities of the device. It ensures that emission reductions achieved are both real and durable and that production units in the field are achieving emission reductions that are consistent with the unit’s verification.

31. What retrofits are available for LSI equipment?

Several retrofit kits have been verified for LSI equipment powered by four, six, and eight cylinder engines. For information on available kits and applications, and links to their manufacturers, visit <http://www.arb.ca.gov/msprog/offroad/orspark/verdev.htm>

32. How will I know when new retrofit systems become available?

You may subscribe to the LSI list serve in order to be notified via e-mail whenever new devices become verified or whenever changes are made to current verifications. To subscribe, just follow the instructions on our website:
<http://www.arb.ca.gov/msprog/offroad/orspark/lists.htm>

33. May I install a retrofit device on an engine that already has emission controls?

Yes, if the retrofit has been verified. Verification can be used in lieu of the ARB's anti-tampering exemption; i.e. if the part is verified it is also considered exempt from anti-tampering prohibitions.

34. Once I have installed a retrofit system on my engine, will I have to upgrade it to a higher performing system if one becomes available?

No, you will not be required to upgrade your engine. However, you will be allowed to upgrade it as discussed in Question 33 above.

35. May I install an experimental emission control system?

Yes, 13 CCR, section 2775.1(g) discusses the requirements under which an operator may use an experimental emission control system.

36. I have a large fleet of uncontrolled equipment. If there are no retrofit systems available, can I request a compliance extension, or will I be required to replace all of the equipment?

As discussed in response to Question 26, fleet operators may request a compliance extension from the Executive Officer of the ARB. Prior to granting an extension, ARB staff will evaluate the requester's total circumstances and will develop a plan in cooperation with the requester that will bring the fleet into compliance. An extension with conditions will then be tailored to reflect the unique circumstances and the compliance plan [see the provisions in section 2775.2 (e)(3)]

Extension planning would include a number of factors and strategies including:

- (1) the characteristics of the equipment, especially age,
- (2) forecasting (with the help of the staff doing the verification) when retrofits might be available for some portion of the fleet,
- (3) what emission reductions are likely to be achieved based upon when retrofits become available and the portion of the fleet to be retrofitted,
- (4) the purchase of new or used controlled or zero emission (electric) equipment to replace a portion of the older uncontrolled fleet, and,
- (5) the reduction in size of the fleet (retirement without replacement).

The goal is to increase operator flexibility and decrease emissions in a cost effective manner while reaching the fleet average standard within the one-year extension period.

RENTALS AND LEASES

37. I'm an equipment dealer. Am I responsible for addressing emissions from equipment in my short-term (less than one year) rental fleet?

There is no direct requirement on dealers unless they operate more than three forklifts or more than three pieces of non-forklift LSI equipment. However, dealers are indirectly affected by customer demand for controlled equipment. By January 1, 2009, (the first fleet average compliance date), the ARB expects that most dealers will have removed the majority of their uncontrolled equipment from their rental fleets.

38. I'm an equipment dealer and some of my equipment is in rental or lease agreements that predate the May 25, 2006 Board hearing. How is this equipment handled?

Equipment operators may exempt this equipment from their fleet average calculation provided that it is leased or rented for less than one year and comprises no more than 20 percent of the operator's fleet. If the rental or lease component exceeds 20 percent, the additional equipment must be included in the fleet average calculation.

AIRPORT GROUND SUPPORT EQUIPMENT

39. The ARB says that the fleet average calculation for non-forklift equipment should be performed separately. Are forklifts used as airport ground support equipment (GSE) included in the non-forklift calculation, or are they addressed separately?

The Airport GSE definition references 24 categories of equipment contained in the South Coast GSE Memorandum of Understanding (See the list on page 2 of the following web site: <http://www.arb.ca.gov/msprog/offroad/gse/appendix-2-final.pdf>). Forklifts are one of those categories. However, the LSI fleet regulation requires GSE forklifts to comply with the forklift fleet average. The remaining categories of GSE equipment must comply with the non-forklift fleet average.

40. What is on-road equivalent GSE?

On-road equivalent GSE are vehicles that normally would be operated on-road, but does not require license plates and may have been modified for airport use.

41. Are my GSE with license plates exempt from fleet average calculations?

Yes, on-airport vehicles with license plates are neither off-road nor on-road equivalent vehicles and are excluded from the rule.

42. Are there limits on the use of electric equipment?

Yes, if the electric vehicle is being used in the fleet average calculation for the in-use off-road diesel regulation (see Question 5.), then it cannot be used in the LSI fleet average calculation (and visa versa).

Additionally, golf carts are covered by the off-highway recreational vehicle regulation and not the LSI regulation; thus, they would not be included in the LSI fleet average. An exception is that an electric golf cart performing the duties of an LPG-fueled piece of GSE may be included in the GSE fleet average calculation.

AGRICULTURAL CROP PREPARATION SERVICES FLEETS

43. My facility has operations that fall under the Agricultural Crop Preparation Services (ACPS) definition and operations that do not. Can the forklifts performing ACPS duties be treated separately under the ACPS compliance requirements?

If your fleets operate under different companies, then they do not have to be aggregated together, and the fleets operating under the ACPS definition may comply with the ACPS retrofit requirements.

44. Does the LSI fleet regulation apply to my agricultural in-field forklifts?

No, forklifts used exclusively in-field to harvest and maintain crops are excluded from the regulation. But the regulation does apply to forklifts used in and around packinghouses and other post harvest facilities such as cotton gins, nut hullers and processors, dehydrators, feed and grain mills, and other related activities.

45. My ACPS fleet has a lot of electric forklifts. Can I choose to follow the fleet average requirements instead of the requirement to retrofit all of my owned 1990 and newer uncontrolled forklifts?

The LSI fleet regulation requires the control of owned ACPS forklifts. Specifically targeted are those forklifts, model-year 1990 and newer, for which retrofit control systems are available. However, operators with a significant number of electric forklifts may chose to comply by ensuring that their overall fleet meets a 3.0 g/bhp-hr average.

ENFORCEMENT

46. Is my local air district enforcing this regulation?

No, the Air Resources Board is enforcing the LSI regulation.

47. Will I be notified in advance of a pending inspection?

In most cases, an enforcement agent will contact you to schedule an inspection. However, unannounced inspections may also occur.

48. If I retire equipment in order to comply with the regulation, but I'm not able to sell or scrap it right away, will I be cited during an inspection if the equipment is still on my property after my required compliance date?

If the operator cannot remove a retired piece of LSI equipment and it is clear that the equipment has been disabled it by drilling the block or removing the engine, then citations are unlikely to occur. However, if the operator plans to sell the equipment and it is still operational, then citation(s) may occur.

49. Am I correct in my belief that the ARB cannot impose fines until such time as the United States Environmental Protection Agency approves the ARB's waiver for the LSI fleet regulation?

The ARB believes it has the authority to enforce regulations from the time they become law.

50. What is the penalty for non-compliance?

There are general statutory penalties that apply – California Health and Safety Code (HSC) sections 43016 and 43017 for ARB vehicle requirements and the Business and Professions Code for unfair business practices, respectively. For penalties sought under HSC sec. 43016 the penalty would be \$500 per LSI piece of equipment per day since they have a requirement in title 13 CCR section 2775.2 to demonstrate that they meet the applicable fleet average emission level standard in section 2775.1(a) any time between January 1, 2009 and December 31, 2015.

MISCELLANEOUS QUESTIONS

51. What happens if my emission control system fails? Am I responsible for addressing it?

Manufacturers warrant each 2004 and later MY engine to be free from defects in materials and workmanship for a period of three years or 2,500 hours, whichever comes first. High cost warranted parts in these engines must be free from defects in materials and workmanship for a period of five years or 3,500 hours.

If the emission control system fails beyond that time period, you may still use the new engine certification standard or retrofit emission control system verification level in your fleet average calculations.

52. Are Class I electric stand up rider trucks considered in the fleet average calculations? How about equipment with a power rating of less than 19 kilowatts?

These questions are addressed in the response to Question 13.

ADDITIONAL INFORMATION

53. How do I stay informed of any new information regarding the LSI fleet regulation?

The best way to stay informed is to subscribe to our e-mail list serve:
<http://www.arb.ca.gov/msprog/offroad/orspark/lists.htm>

54. Who do I contact if I have questions about what the regulation requires or need help determining my required compliance schedule?

Please contact Mark Williams at mwilliam@arb.ca.gov or 916.327.5610, or you can visit our website: <http://www.arb.ca.gov/msprog/offroad/orspark/orspark.htm>